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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,355	06/25/2003	Steven Ray Merrigan	CM2680&	4019
27752	7590	03/14/2006	EXAMINER	
THE PROCTER & GAMBLE COMPANY INTELLECTUAL PROPERTY DIVISION WINTON HILL TECHNICAL CENTER - BOX 161 6110 CENTER HILL AVENUE CINCINNATI, OH 45224			WU, IVES J	
			ART UNIT	PAPER NUMBER
			1713	

DATE MAILED: 03/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/606,355

Applicant(s)

MERRIGAN ET AL.

Examiner

Ives Wu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 37-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 37-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/19/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1 ~ 36 are cancelled.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

(1). **Claims 37 – 39, 43 - 44 and 48** are rejected under 35 U.S.C. 102(e) as being anticipated by Kim (US006914099B2).

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

(2). Kim (US006914099B2) discloses a superabsorbent polymers having reduced Level of monomers being produced using a peroxodisulfate salt (Abstract). A process for the preparation of water-absorbent resin particles which comprising:

(I). **Polymerizing** a polymerization mixture comprising:

- (a) one or more ethylenically unsaturated carboxyl-containing monomers,
- (b) one or more crosslinking agents,

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(c) optionally one or more comonomers copolymerizable with carboxyl-containing monomer, and

(d) a polymerization medium, to form a crosslinked **hydrogel**,

(II). **Contacting** the crosslinked hydrogel with a **peroxodisulfate salt**,

(III). Comminuting the hydrogel to particles prior or after the peroxodisulfate salt is added in step (II) and

(IV). Drying the hydrogel to form resin (Col. 2, line 25-37).

The water-absorbent resin particles after drying but before the heat treatment, a low residual monomer content, preferably less than 300 ppm, most preferably less than 100 ppm, based on the weight of polymer solids (Col. 2, line 49-58). The polymers are prepared from one or more ethylenically unsaturated carboxylic acids or salts thereof (Col. 2, line 59-62). Preferred unsaturated carboxylic acid monomers include the **acrylic acids** (Col. 3, line 4-6).

Incorporated into the resin are polyvinyl crosslinker and nonvinyl crosslinkers which has at least two functional groups capable of reacting with carboxylic groups of the polymer, such as **glycerin**, polyglycols, ethylene glycol (Col. 4, line 30-34). Polymerization can be accomplished under polymerization conditions in an aqueous or nonaqueous polymerization medium or in a mixed aqueous/nonaqueous polymerization medium (Col. 5, line 54-57). The monomers and crosslinkers, are preferably dissolved, dispersed or suspended in a suitable polymerization medium, such as, for example, the aqueous medium at a concentration, most preferably 29 wt% or more (Col. 6, line 13-20). During the polymerization, the resin generally absorbs the entire aqueous reaction medium to form a hydrogel. The resin is removed from the reactor in the form of an aqueous hydrogel (Col. 8, line 26-29). The hydrogel may be contacted with the peroxodisulfate salt prior to the comminuting the hydrogel to particle, but before any moisture is removed. The mixing of the hydrogel and the peroxodisulfate salt into the wet polymer gel (Col. 8, line 64-66). After contact with the peroxodisulfate salt, optionally in combination with a chloride- or bromine-containing oxidizing agent is added to the hydrogel (Col. 9, line 22-23). Illustrated in Examples 12 to 20, the peroxodisulfate treated samples again show the most improved residual monomer concentration, with relative improvement ranging between approximately 30 and 40 % (Col. 18, line 58-61).

(3). As to the 10 to 70 wt% of water, 10 to 60 wt% of at least one starting monomer and 10 to 80 wt% of at least one polyol in the reaction medium in the step of polymerization for making a hydrogel in **independent claim 37**, Kim discloses that the monomer and crosslinker preferably to be greater than 30 wt% concentration level in aqueous medium recited in paragraph (2).

As to the chemical treatment on hydrogel by 1st compound capable of reacting with either residual monomers, or impurities, or by-product produced by polymerization reaction, reducing the concentration of either residual monomers, or impurities, or by-product in 2nd step of the process for making a hydrogel in **independent claim 37**, Kim discloses contacting the hydrogel with peroxodisulfate salt to reduce the residual monomers content recited in paragraph (2). The peroxodisulfate is used as initiator in the polymerization in Examples (Col. 14, line 51-53), which is capable of reacting with the 2nd compound as claimed. Also evidenced by ¹Funk et al (US006297335B1).

As to the polymerization byproduct containing at least one α , β unsaturated carbonyl derived from at least on polyol in **dependent claim 43**, and acrolein in **dependent claim 44**, in view of the identical polyol of glycerin disclosed by Kim, and by applicant, and identical thermal polymerization disclosed by Kim, and by applicants, it is the examiner position to believe that the byproduct of acrolein would inherently produced in the Kim's polymerization reaction, as evidenced by the teaching of ²Hawley's Condensed Chemical Dictionary, 11th Ed, page 18. Since USPTO does not have proper means to conduct the experiments, the burden now is shifted to applicant to prove otherwise. *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977).

¹ Funk et al (US006297335B1) disclose to initiate the polymerization it is possible to use high energy electromagnetic radiation or the customer chemical polymerization initiators, for example organic peroxides, azo compounds and inorganic peroxo compounds, optionally in combination with reducing agents such as sodium bisulfite (Col. 5, line 26-39, Inventive Example 1).

² (Hawley's Condensed Chemical Dictionary, 11th Ed, page 18) - Acrolein: Derivation: (a) Oxidation of allyl alcohol or propylene; (b) by heating glycerol with magnesium sulfate; (c) from propylene with bismuth-phosphorus-molybdenum catalyst.

(4). **Claims 49 - 54** are rejected under 35 U.S.C. 102(e) as being anticipated by Merrigan et al (EP 1245241A1)

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

(5). As to the hydrogel comprising 10 to 70 wt% water, 10 to 60 wt% of crosslinked hydrophilic polymer made from at least one starting monomer, and from 10 to 80 wt% of at least one polyol, hydrogel being produced by polymerizing at least one starting monomer in the presence of water and at least one polyol in **independent claim 49**, Merrigan et al (EP 1245241A1) disclose the polymerized hydrogel adhesive comprising 10 – 90 wt% of water and 10-60 wt% of crosslinked hydrophilic polymer. The hydrophilic polymer is made by polymerizing monomers which comprise acrylamido-2-methane propanesulfonic acid and its salt ([0006], line 1-3). Such adhesive contains 5-80 wt% of glycerol as a humectant ([0007], line 2-3). Shown in the Examples 1-3: Preparation of polymerized adhesive hydrogel that water, glycerol are in presence of forming hydrogel (page 7 – 8).

As to the hydrogel comprising less than 100 ppb of at least one α,β -unsaturated carbonyl by-product derived from at least one polyol during the polymerization in **independent claim 49**, and less than 20 ppb in **dependent claim 50**, and by-product to be acrolein in **dependent claim 51**, Merrigan et al disclose that during the photopolymerization process, glycerol can produce acrolein as a decomposition product, and thus it is critical to keep the acrolein at level, most preferably below 40 ppb ([0026], line 1-3), by controlling the pH within the limits, the amount of

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acrolein generated during photopolymerization as a result of acid or base catalyzed reactions can be diminished ([0027], line 3-4).

As to the residual monomers to be in an amount of less than 200 ppm in the hydrogel in **dependent claim 52**, and less than 10 ppm in **dependent claim 53**, Merrigan et al disclose the residual level of all monomers being less than 400 ppm, most preferably less than 50 ppm ([0006], line 7-11).

As to the starting monomer comprising acrylic acid in **dependent claim 54**, Merrigan et al disclose suitable weak acid monomers including acrylic acid ([0011], line 9-10).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(6). **Claims 40 - 42** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (US006914099B2).

As to the nucleophilic compound added to the hydrogel in **dependent claim 40**, Kim **does not teach** adding the nucleophilic compound.

However, Kim **teaches** reducing agents such as sodium bisulfite to be used in combination with inorganic peroxo compounds initiators (Col. 5, line 28-34), such as

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potassium peroxodisulfate in inventive Example 1 (Col. 9, line 36-39).

The advantage of adding the sodium bisulfate is to form a conventional redox initialization system in the presence of peroxodisulfate initiator to enhance reaction (Col. 6, line 28-31, Col. 14, line 51-53). Moreover, Kim uses the peroxodisulfate salt for the after treatment recited in paragraph (2).

Therefore, it would have been obvious at time the invention was made to add the nucleophilic compound such as sodium bisulfite in addition to the peroxodisulfate to contact the hydrogel of Kim for the after-treatment in order to obtain the above-mentioned advantage.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(7). **Claims 55 - 56** are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kim (US006914099B2).

As to the hydrogel compositions in the **independent claim 55**, the disclosure of Kim is incorporated herein by reference, the most subject matters of water, cross-linked hydrophilic polymer and at least one polyol with their contents as claimed has been recited in applicant's claim 37, and has been discussed in paragraph (2) and (3).

As to the byproduct derived from at least one polyol, nucleophilic compound in **independent claim 55**, the disclosure of Kim is incorporated herein by reference, the most subject matters of α , β -unsaturated carbonyl by-product, bisulfite as claimed has been recited in applicant's claims 44 and 42, and has been discussed in preceding paragraphs of present paragraph and paragraph (6).

As to the addition product of nucleophilic compound and byproduct of at least one polyol in **independent claims 55 and 56**, in view of the same bisulfite of nucleophilic compound and acrolein by-product from at least one polyol, it is the examiner's position to believe that the addition products in instant claims 55 and 56 would be inherently possessed by the hydrogel of Kim, as further evidenced by process of ³Contat et al (US003519645). Since USPTO does not proper means to conduct the experiments, the burden now is shifted to applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980).

As to the amount of addition product at least 20 ppb in **independent claim 55**, in absence of showing the criticality of records, the optimization value of at least 20 ppb in a known process content renders *prima facie obviousness* within one ordinary skill in the art. *In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980).

³ Contat et al (US003519645) – The hydroxyl-propane sulfonic acid being used in the process may be obtained according to the known processes. For example, the corresponding alkali metal salt is first formed, by addition of alkali metal bisulfite to acrolein, followed by reduction, or by addition of bisulfite to allylic alcohol (Col. 2, line 71 – Col. 3, line 5)

(8). **Claims 45-47** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (US006914099B2) in view of Funk et al (US006297335B1) and "Textbook of Polymer Science", page 50.

As to the UV irradiation polymerization in **dependent claim 45**, Kim **does not teach** the photopolymerization method.

However, Funk et al **teach** using high-energy electromagnetic radiation for polymerization in aqueous solution by gel polymerization process (Col. 5, line 26-27, line 40-41).

The advantage of using photoinitiated polymerization is to control with high precision for the rate of generation of free radicals by controlling the intensity of the initiating light (page 50, line 1-7 of last paragraph).

Therefore, it would have been obvious at time the invention was made to use the UV polymerization method of Funk et al for the hydrogel polymerization of Kim in order to obtain the aforementioned advantage.

As to the UV irradiation intensity wavelength distribution in **dependent claim 46**, in absence of showing the criticality, the optimization value of 280 nm wavelength to be less than 10% of the total integrated UV intensity of wavelength less than 400 nm in a known process renders *prima facie obviousness* within one ordinary skill in the art. *In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980).

As to the total amount of UV irradiation in **dependent claim 47**, in absence of showing the criticality, the optimization value of 0.1 J/cm² to 30 J/cm² a known process renders *prima facie obviousness* within one ordinary skill in the art. *In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980).

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ives Wu whose telephone number is 571-272-4245. The examiner can normally be reached on 8:00 - 5:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner: Ives Wu
Art Unit: 1713
Date: March 7, 2006


DAVID W. WU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700